

USFWS Fact Sheet



Secondary Pentobarbital Poisoning of Wildlife

Pentobarbital-euthanized Carcasses are Poisonous to Scavenging Animals!

Euthanasia by sodium pentobarbital injection is a humane way to end the life of a suffering animal, and is recommended for many species by the AVMA Panel on Euthanasia.¹ Ironically, this compassionate act can sometimes have the unintended consequence of causing the premature death of other animals. Each year a number of bald and golden eagles, other wildlife, and domestic dogs are intoxicated or killed after



Bald eagle killed by scavenging euthanized cat in Florida landfill. Photo courtesy of SA John Rawls, USFWS-LE.

ingestion of pentobarbital residues in the tissue of exposed euthanized carcasses. Exposure of these carcasses is almost always the result of improper disposal.

Eagle and other animal deaths have been reported in 16 different states throughout the US as well as in Canada. In recent years at least 50 eagle poisoning incidents have been documented, accounting for the poisoning of 139 eagles in these cases alone. These birds had scavenged carcasses of euthanized farm animals or pet horses left out in the field, or small animal carcasses that were left unburied or otherwise exposed at landfills.

Which Wildlife are Affected by Secondary Poisoning?

Reported accidental poisoning cases include bald and golden eagles, ravens and magpies. In fact, there are a number of birds and mammals that feed on carrion and are potentially susceptible to being poisoned. Scavenging birds, in addition to eagles, include California condors, vultures, several hawk species, wood storks, crows, gulls and others.

Scavenging mammals include foxes, bears, martens and fishers, coyotes, lynx, bobcats, cougars, otters and others. Domestic dogs have also been intoxicated or killed by scavenging poisoned carcasses, and the accidental feeding of tainted meat has resulted in the deaths of tigers, lions, and cougars held in captivity.

How Does Secondary Poisoning Occur?

When an animal is euthanized via pentobarbital injection, the drug is quickly distributed throughout its body. Well-vascularized organs such as the liver will have especially high concentrations of pentobarbital, but other tissues will also contain residues. When a scavenger feeds on the carcass, the degree of intoxication will depend on the amount and type of tissue ingested. A lethal dose for a bird would generally be much lower than the amount administered to euthanize the source carcass. In fact, large animal carcasses may contain enough accessible residues to kill at least two tiger-sized mammals.

The ability of bald and golden eagles to move quickly on a fresh carcass and then aggressively fend off other potential scavengers, coupled with their preference for viscera, makes them particularly susceptible to secondary poisoning. Further, eagles may be more sensitive to the effects of the drug compared to other species, as raptors have a relatively narrow tolerance for barbiturates. In one incident, 29 bald eagles were poisoned by feeding on a single cow carcass. However, eagles have also been killed by scavenging small animal carcasses, such as euthanized pets that were left exposed in landfills.

Many animals that ingest poisoned tissue are acutely intoxicated, become comatose, and are discovered lying dead beside the poisoned carcass. Others are able to walk or fly short distances and are found staggering around the field or landfill, in adjacent fields or woodlots, near roost trees, or in parking lots or other areas. Finally, a number of intoxicated victims may be killed by blunt trauma (wandering into traffic or falling from perches), predation, drowning, fatal mobbing attacks by other species, or electrocution after contact with power lines and poles.

How Do Animals Gain Access to Poisoned Carcasses?

Most incidents of secondary poisoning (excluding accidental feeding of tainted meat to zoo animals) have been caused by both intentional and unintentional failure to properly dispose of a pentobarbital-tainted carcass, leaving it exposed in the environment and available to animal scavengers. There are many instances in which euthanized large animals including sheep, goats, pigs, horses, mules and cows, have been left out in the

field to be scavenged. In most cases, the poisonings are inadvertent and the result of poor communication between the attending veterinarian and the livestock owner. Often, animal owners are unaware that a pentobarbital-euthanized carcass can be poisonous to carrion feeders, and must be made inaccessible through rapid burial or other means of disposal. Tragically, in several past cases well-intentioned farmers had purposely left out carcasses because they thought that the local eagle population would benefit from this extra food.



Euthanized horse carcass left on open ground, scavenged by eagles and other carrion feeders. Photo courtesy of SA Steve Magone, USFWS-LE.



Vultures and gulls scavenge an active landfill. Photo courtesy of SA John Rawls, USFWS-LE.

In other instances of poisoning, small animal

carcasses from veterinary practices or humane shelters have been legally deposited in a landfill but then left exposed to scavengers because they were not covered over in a timely manner by the landfill workers. In these instances, problems with landfill regulations or management practices contributed proximally to the poisonings. Finally, there have been several cases involving animals poisoned by carcasses that were illegally dumped on public lands and purposely left unburied.

Which Laws Have Been Violated When Bald Eagles or Other Wild Birds are Poisoned as a Result of Improper Carcass Disposal?

There are several federal statutes that may be violated in these cases, including the Migratory Bird Treaty Act (MBTA), the Bald and Golden Eagle Protection Act (EPA), and the Endangered Species Act (ESA). **MBTA protects virtually all wild avian species, parts thereof, eggs and nests**, and excludes only a few introduced species. **EPA protects bald and golden eagles, parts thereof, eggs and nests.** **ESA protects all threatened and endangered plant and animal species** as well as critical habitat areas.

The US Fish & Wildlife Service is responsible for the enforcement of these wildlife protection laws and is empowered to investigate and prosecute suspected violations. USFWS Special Agents perform field investigations of all reported incidents, including the circumstances of the poisoning and the source of the tainted carcass. Tissue samples are analyzed at the USFWS National Wildlife Forensics Laboratory to confirm the presence of pentobarbital residues as well as the identity of the source carcass.

Statutes regarding permitted carcass disposal methods are generally promulgated at the state and local level. State health and environmental agencies commonly regulate dead stock disposal time limits, available disposal methods, landfill treatment of solid waste (including animal carcasses) and specifics of carcass burial, if permissible. Additional laws may apply to livestock or horses that are suspected carriers of a transmissible disease. If scavengers, which can act as disease vectors, are afforded access to a potentially infectious carcass, federal and state departments of agriculture regulations may be violated.

Some animal species may not be specifically protected by federal law. However, since other animals, including pet dogs, have been intoxicated or killed after feeding on poisoned carcasses, it is possible that those involved in such an incident would be open to civil liability under applicable state and local laws.

What are the Penalties Under Federal Law Applicable to the Livestock Owner and Attending Veterinarian?



To date, veterinarians and livestock owners have been fined under the aforementioned statutes for the “involuntary killing” of eagles. Veterinarians have also been asked to write about the incidents in professional journals in order to make other practitioners more aware of the problem.

Penalties sought by USFWS are based on the circumstances surrounding a poisoning incident, and vary on a case-by-case basis. The laws provide for substantial fines in criminal violations, along with imprisonment for the most egregious offenses. Criminal penalties can run as high as \$250,000 per individual, or \$500,000 per organization under MBTA and EPA, and may include imprisonment for up to 2 years. The acts also provide for forfeiture of vehicles and equipment under some circumstances. In civil cases maximum fines range from \$500 (for “any” violation) to \$25,000 (for a “knowing” violation) under ESA and up to \$5000 for any violation of EPA.

Could the Veterinarian and/or the Livestock Owner Really be Liable for an Accidental Poisoning?

The short answer is **YES!** Cases pursued by USFWS have primarily involved euthanized large animal carcasses that were left out exposed to scavengers. In many instances, the need for rapid burial or disposal of the poisoned carcass was not adequately communicated to the animal’s owner by the attending veterinarian. Misunderstanding, rather than malice, has been a primary cause of this problem. However, the MBTA is a “strict liability” criminal statute, meaning that a finding of intent is not required for a

criminal conviction. **Thus, an individual that caused a bird to be harmed, even unintentionally, may be held criminally liable under the act.** Similarly, ESA and EPA apply a “strict liability” standard for civil cases, though a criminal prosecution would require that the offender acted “knowingly” or with a “wanton disregard” for the consequences. **Thus, under these two statutes a civil violation could occur even when the individual did not purposely set out to break the law.**

The best way to avoid liability is to avoid an accidental poisoning! This also applies to small animal clients who wish to bury an animal at home. A prominent carcass disposal warning on the client’s copy of the euthanasia consent form might be of help as an additional reminder.

How can Secondary Pentobarbital Poisoning be Prevented?

1. Proper Disposal

- ✓ **Incineration/Cremation**, if available, is the preferred method of disposal.
- ✓ **Immediate deep burial** will also prevent access to scavengers. Most regulations require at least 3-4 feet of cover. Beyond local statutory minimums, additional amounts or types of exclusionary cover may be required in certain habitat areas. This total coverage should always be defined by the ability of local scavenging wildlife to access buried carcasses.

All burials should properly address the required distance above groundwater table, appropriate soil type, and permitted locations for burial pits. If frozen ground prevents immediate burial, the carcass must be covered or stored in such a way that access by animal scavengers is prevented. Some regulations specify that a wooden or metal lid designed to exclude scavengers may be used in burial pits that are not immediately covered over with the required amount of soil.

- ✓ **Double bagging with “heavy duty” sacs and clear labeling of poison carcasses should be the minimum acceptable standard at every small animal veterinary clinic, humane shelter, or animal control facility that sends out carcasses for third party disposal.**
- ✓ **Local landfill regulations and management practices** must be reviewed and revised if they currently afford easy access by scavengers to poisoned animal carcasses.

Rendering is not an acceptable way to dispose of a pentobarbital-tainted carcass. The drug residues are not destroyed in the rendering process, so the tissues and by-products may contain poison and must not be used for animal feed.

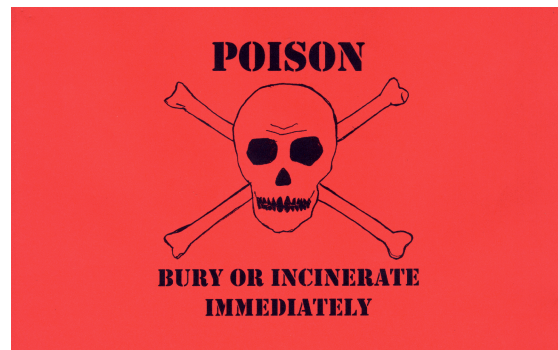
Note on Carcass Disposal Regulations:

Carcass disposal regulations and requirements vary substantially among cities, counties, and states, as do the agencies that administer and enforce them. In the event of client inquiry, direct clients to check with federal, state and local agricultural, environmental, and public health authorities. Agricultural regulators include the (federal) USDA, APHIS, and your state Department of Agriculture. Environmental regulators whose entire or partial focus is solid waste handling and disposal include the (federal) EPA, and state and local Departments of Ecology, Environmental Health, Environmental Management, Solid Waste Management, or other similar agency. Your State Veterinarian and other public health regulators such as the Department of Health or Public Health, Board of Animal Health, or other similar agency will be able to advise on the public and animal health aspects of carcass disposal and burial. Many state and local codes can be accessed online. Also, University cooperative extension services may have information on carcass disposal methods approved for your area.

Finally, note that regulations may change as lawmakers seek to balance growing concerns over biosecurity and transmissible spongiform encephalopathies with the ongoing need for environmental protection.

2. Better Communication

- ✓ **Veterinarian-Client communication is paramount.** It is essential that the client is informed and understands that a pentobarbital-euthanized animal carcass in his custody can poison and kill a scavenging animal, including federally-protected species, other wildlife, and domestic dogs. The veterinarian must be certain each client understands the requirement for rapid burial, incineration, or other approved disposal. Livestock owners must be informed by the veterinarian that any “temporary storage” that may leave a carcass exposed to scavenging is unacceptable.
- ✓ **All pentobarbital-euthanized carcasses should be prominently tagged with one or more highly-visible “POISON” warning labels.** Bagged animals should have a label affixed to the carcass itself and also attached to the outside of the bag.
- ✓ **A prominent carcass disposal warning on the client and practice copies of the euthanasia consent form would serve as an additional reminder to both the**



Sample warning tag for pentobarbital-euthanized carcass. Tag courtesy of Habitat and Animal Health Concern, Inc.

veterinarian and the client.

- ✓ **Small animal practices and humane shelters that lack on-site cremation facilities and therefore contract out to third parties for carcass removal should be sure to employ a reputable, licensed disposal company.**

3. Alternate Euthanasia Methods for Free-ranging Wildlife

- ✓ **Euthanasia methods such as gunshot or penetrating captive bolt have been used on free-ranging wildlife by specially trained personnel in cases where burial or other methods of disposal were unavailable.** While pentobarbital injection is generally the preferred method of humane euthanasia, there are some instances



Bald eagle perched on carcass bags at dump. Photo courtesy of Dr. Dick Stroud, USFWS (photographer unknown).

trained, authorized personnel, where no other options are available.

involving field euthanasia of wildlife by law enforcement or other wildlife professionals in which the carcass must be left exposed in the field (e.g. when frozen ground prevents burial). According to the AVMA Panel on Euthanasia¹, in these situations “...a gunshot to the head, penetrating captive bolt, or injectable agents that are non-toxic (potassium chloride **in combination with a non-toxic general anesthetic**) should be used so that the potential for scavenger or predator toxicity is lessened.” While a discussion of these alternate methods is beyond the scope of this fact sheet, it must be emphasized that they are **last resort procedures restricted to use by**

¹2000 Report of the AVMA Panel on Euthanasia. J Am Vet Med Assoc 2001; 218: 669-696.

Who Can be Contacted for Further Information on Secondary Pentobarbital Poisoning?

1. For information on medical treatment of poisoning victims, the National Animal Poison Control Center of the ASPCA runs a fee-based service for emergencies and other cases: 1-888-426-4435 (1-888-4ANIHELP).
2. To determine whether a case falls under USFWS jurisdiction, for information on law enforcement and liability issues, or if you have found a dead animal, contact your regional US Fish and Wildlife Service Law Enforcement Office and visit the USFWS web site at www.fws.gov. Regional Law Enforcement Office information is listed below.

Pacific Region (1)
USFWS-LE
911 NE 11th Avenue
Portland, OR 97232-4171
phone: 503-231-6125
CA, HI, ID, NV, OR, WA
and Pacific Trust Territories

Northeast Region (5)
USFWS-LE
300 Westgate Center Drive
Hadley, MA 01035
phone: 413-253-8274
CT, DE, ME, MD, MA, NH, NJ, NY, PA
RI, VT, VA, WV

Southwest Region (2)
USFWS-LE
PO BOX 329
Albuquerque, NM 97103
phone: 505-248-7889
AZ, NM, OK, TX

Mountain-Prairie Region (6)
USFWS-LE
PO BOX 25486-DFC
Denver, CO 80225
phone: 303-236-7540
CO, KS, MT, NE, ND, SD, UT, WY

Great Lakes-Big Rivers Region (3)
USFWS-LE
One Federal Drive
Fort Snelling, MN 55111-0045
phone: 612-713-5320
IL, IN, IO, MI, MN, MO, OH, WI

Alaska Region (7)
USFWS-LE
1011 E. Tudor Road, Mail Stop 151
Anchorage, AK 99503-6199
phone: 907-786-3311
AK

Southeast Region (4)
USFWS-LE
PO BOX 49226
Atlanta, GA 30359
phone: 404-679-7057
AL, AR, FL, GA, KY, LA, MS, NC,
SC, TN, PR, USVI

National Headquarters
USFWS-LE
4401 North Fairfax Drive
Arlington, VA 22203
phone: 703-358-1949

3. To determine whether a case falls under the jurisdiction of your state wildlife agency, for state and local assistance with dead wildlife, carcass issues, or other wildlife-related questions contact your nearest office of the state Department of Fish and Wildlife, Fish and Game, or other Wildlife agency in your state. Links to many state wildlife agencies can be found at <http://www.tc.umn.edu/~devo0028/gov.htm>.

4. For nonwildlife poisonings contact your local law enforcement office, Animal Control, or Humane Society.

5. USGS National Wildlife Health Center, Madison, Wisconsin, www.nwhc.usgs.gov, maintains a partial database of secondary pentobarbital poisoning cases.

National Wildlife Health Center
6006 Schroeder Road
Madison, WI 53711
phone: 608-270-2400

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